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EXAMINER

CONTEE, JOY KIMBERLY

ART UNIT

PAPER NUMBER

2681

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Please find below and/or attached an Office communication concerning this application or proceeding.

N.M.

Office Action Summary

Application No.
09/444,166

Applicant(s)
Hosonuma

Examiner
Joy K. Contee

Art Unit
2681



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on Nov 22, 1999

2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 35 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) 1-18 is/are pending in the applica

4a) Of the above, claim(s) _____ is/are withdrawn from considera

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) 1-18 is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirem

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a) ☒ All b) ☐ Some* c) ☐ None of:

1. ☒ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. _____

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15) ☒ Notice of References Cited (PTO-892)

18) ☐ Interview Summary (PTO-413) Paper No(s). _____

16) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)

19) ☐ Notice of Informal Patent Application (PTO-152)

17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 2 and 4

20) ☐ Other:

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DETAILED ACTION

Claim Objections

1. Claim 13 is objected to because of the following informalities: in (d) the preposition "on" appears to be omitted following the term "formed" (see line 10). Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Hiroshi, JP4313300 A, abstract.

Regarding claims 1 and 7, Hiroshi discloses a flexible board (and method of fabricating) comprising:

(a) an internal layer (i.e., formed by signal wires #3) (*see abstract, purpose and figure*);

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(b) a line (i.e., signal wires #3) formed in a first area of said internal layer, said line radiating unnecessary radiation (*see abstract, constitution, lines 8-10*);

(c) a first ground layer (i.e., #4) formed on an upper surface of said internal layer, said first ground layer disallowing radiation to pass therethrough (*see constitution, lines 5-7 and figure*) ; and

(d) a second ground layer (#4) formed on a lower surface of said internal layer, said second ground layer disallowing radiation to pass therethrough (*see constitution, lines 5-7 and figure*).

Regarding claims 2 and 8, Hiroshi discloses the flexible board (and fabrication of) as set forth in claims 1 and 7, respectively, further comprising:

(e) a first cover layer (i.e., #6) formed over a surface of said first ground layer (*see abstract, constitution, lines 4-10*); and

(f) a second cover layer (i.e., #61) formed over a surface of said second ground layer (*see abstract, constitution, lines 4-10*).

Regarding claims 3 and 9, Hiroshi discloses the flexible board (and fabrication of) as set forth in claims 2 and 8, respectively, further comprising electrically insulating adhesive layers sandwiched among said internal layer, said first and second ground layers, and said first and second cover layers (*see abstract, constitution lines 1-4*) .

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Regarding claims 4 and 10, Hiroshi discloses the flexible board (and fabrication of) as set forth in claims 1 and 7, respectively, further comprising a ground line (i.e., #4) formed in a second area except said first area in said internal layer (*see constitution, lines 5-7 and figure*).

Regarding claims 5 and 11, Hiroshi discloses the flexible board (and fabrication of) as set forth in claims 1 and 7, respectively, wherein a plurality of through-holes is formed throughout said first ground layer, said internal layer, and said second ground layer (*see abstract, constitution, lines 5-7*).

Regarding claims 6 and 12, Hiroshi discloses the flexible board (and fabrication of) as set forth in claims 4 and 10, respectively, wherein a plurality of through-holes is formed throughout said first ground layer, said ground line, and said second ground layer said through-holes electrically connecting said first ground layer said ground line and said second ground layer to one another (*see abstract, constitution, lines 5-7*).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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5. Claims 13-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mitama, U.S. Patent No. 5,740,527, in view of Hiroshi.

Regarding claim 13, in view of the claim objective mentioned above, Mitama discloses a cellular phone including a flexible board (col. 3, lines 33-44).

Mitama does not explicitly disclose the specific arrangement wherein the flexible board comprises (a) an internal layer; (b) a line formed in a first area of said internal layer, said line radiating unnecessary radiation; (c) a first ground layer formed on an upper surface of said internal layer, said first ground layer disallowing radiation to pass therethrough; and (d) a second ground layer formed on a lower surface of said internal layer, said second ground layer disallowing radiation to pass therethrough.

However, in a similar field of endeavor, as discussed above, Hiroshima is evidence of the flexible board comprising:

- (a) an internal layer (i.e., formed by signal wires #3) (*see abstract, purpose and figure*);
- (b) a line (i.e., signal wires #3) formed in a first area of said internal layer, said line radiating unnecessary radiation (*see abstract, constitution, lines 8-10*);
- (c) a first ground layer (i.e., #4) formed on an upper surface of said internal layer, said first ground layer disallowing radiation to pass therethrough (*see constitution, lines 5-7 and figure*); and

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(d) a second ground layer (#4) formed on a lower surface of said internal layer, said second ground layer disallowing radiation to pass therethrough (*see constitution, lines 5-7 and figure*).

At the time of the invention it would have been obvious to one of ordinary skill in the art that the shielded flexible printed circuit board described in Hiroshi would be limited to application within a certain type of electronic apparatus. Thus it would have been also been obvious to one of ordinary skill in the art to have modified Mitama to include the flexible printed circuit board arrangement as disclosed in Hiroshi in order to provide a solution of reducing interference in cellular transceiver.

Regarding claim 14, the combination of Mitama and Hiroshi disclose the cellular phone comprising a flexible board as set forth in claim 13. However, Hiroshi specifically discloses the flexible board, further comprising:

(e) a first cover layer (i.e., #6) formed over a surface of said first ground layer (*see abstract, constitution, lines 4-10*); and

(f) a second cover layer (i.e., #61) formed over a surface of said second ground layer (*see abstract, constitution, lines 4-10*).

At the time of the invention it would have been obvious to one of ordinary skill in the art that the shielded flexible printed circuit board described in Hiroshi would be limited to application within a certain type of electronic apparatus. Thus it would have been also been obvious to one of ordinary skill in the art to have modified Mitama to include the flexible printed

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circuit board arrangement as disclosed in Hiroshi in order to provide a solution of reducing interference in cellular transceiver.

Regarding claim 15, the combination of Mitama and Hiroshi disclose the cellular phone comprising a flexible board as set forth in claim 14. However, Hiroshi discloses the flexible board, further comprising electrically insulating adhesive layers sandwiched among said internal layer, said first and second ground layers, and said first and second cover layers (*see abstract, constitution lines 1-4*).

At the time of the invention it would have been obvious to one of ordinary skill in the art that the shielded flexible printed circuit board described in Hiroshi would be limited to application within a certain type of electronic apparatus. Thus it would have been also been obvious to one of ordinary skill in the art to have modified Mitama to include the flexible printed circuit board arrangement as disclosed in Hiroshi in order to provide a solution of reducing interference in cellular transceiver.

Regarding claim 16, the combination of Mitama and Hiroshi disclose the cellular phone comprising a flexible board as set forth in claim 13. However, Hiroshi disclose the flexible circuit board, further comprising a ground line (i.e., #4) formed in a second area except said first area in said internal layer (*see constitution, lines 5-7 and figure*).

At the time of the invention it would have been obvious to one of ordinary skill in the art that the shielded flexible printed circuit board described in Hiroshi would be limited to application within a certain type of electronic apparatus. Thus it would have been also been

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obvious to one of ordinary skill in the art to have modified Mitama to include the flexible printed circuit board arrangement as disclosed in Hiroshi in order to provide a solution of reducing interference in cellular transceiver.

Regarding claim 17, the combination of Mitama and Hiroshi disclose the cellular phone comprising a flexible board as set forth in claim 13. However, Hiroshi disclose the flexible circuit board, wherein a plurality of through-holes is formed throughout said first ground layer, said internal layer, and said second ground layer (*see abstract, constitution, lines 5-7*).

At the time of the invention it would have been obvious to one of ordinary skill in the art that the shielded flexible printed circuit board described in Hiroshi would be limited to application within a certain type of electronic apparatus. Thus it would have been also been obvious to one of ordinary skill in the art to have modified Mitama to include the flexible printed circuit board arrangement as disclosed in Hiroshi in order to provide a solution of reducing interference in cellular transceiver.

Regarding claim 18, the combination of Mitama and Hiroshi disclose the cellular phone comprising a flexible board as set forth in claim 16. However, Hiroshi discloses the flexible circuit board wherein a plurality of through-holes is formed throughout said first ground layer, said ground line, and said second ground layer said through-holes electrically connecting said first ground layer said ground line and said second ground layer to one another (*see abstract, constitution, lines 5-7*).

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At the time of the invention it would have been obvious to one of ordinary skill in the art that the shielded flexible printed circuit board described in Hiroshi would be limited to application within a certain type of electronic apparatus. Thus it would have been also been obvious to one of ordinary skill in the art to have modified Mitama to include the flexible printed circuit board arrangement as disclosed in Hiroshi in order to provide a solution of reducing interference in cellular transceiver.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Pance et al., U.S. Patent No. 6,178,311, discloses a method and apparatus for isolating high frequency signals in a printed circuit board.

Ameen et al., U.S. Patent No. 5,241,454, discloses a multilayered flexible circuit package.

Smith, U.S. Patent No. 5,937,361, discloses a radiotelephones with shielded microphones.

Kubo, U.S. Patent No. 6,101,372, discloses a portable telephone set.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joy K. Contee whose telephone number is (703) 308-0149.

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The examiner's normal working hours are between 5:30 a.m. and 2:00 p.m., Monday through Friday.

If the examiner can not be reached, the examiner's supervisor, Dwayne Bost can be reached on (703)305-4778.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group Customer Service Office whose telephone number is (703)306-0377.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314, (for formal communications intended for entry)

Or:

(703) 872-9314, (for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).



Joy K. Contee

January 13, 2002



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1-14-02